UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/237,128	01/25/1999	FRANK KASTENHOLZ	AGM-002	9585

959   7590   05/02/2003

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EXAMINER
HO, DUC CHI

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 05/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

Office Action Summary		Application No.	Applicant(s)
	●	09/237,128	● KASTENHOLZ, FRANK
		Examiner	Art Unit
		Duc C Ho	2665

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 February 2003* .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *3-5,7,8,10-13,15-18 and 21-31* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-5,7,8,10-13,15-18 and 21-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *12* .

4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other: .

DETAILED ACTION

Claim Objections

1.   Claim 4 is objected to because of the following informalities: It seems a typo error has

occurred that the word " in" should replace "and" in lines 7, and 10. Appropriate correction is

required.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(e) that form

the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999

(AIPA) do not apply to the examination of this application as the application being examined

was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C.

122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment

by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3.   Claims 3-5, 7, 8, 10-13, 15-16, 21-25, and 27-31 are rejected under 35 U.S.C. 102(e) as

being anticipated by Sjodin (WO 99/13619-in record).

Regarding claim 4, Sjodin discloses a lookup device and a method for classification and

forwarding of packets.   Figure 5 discloses a flow chart describing a method for forwarding an IP

packet by searching for a longest matching prefix of a destination address of an IP packet in

three stages (*lookups*) or so. The search for the longest matching prefix bases on for a first

number of bits, second number of bits, and for a third number of bit in the respective tables, page

15, lines 6-35.

receiving header data of a network layer packet (an IP router inherently receives a

packet with header containing destination address in bits format that needs to be examined and

classified, page 1, lines 19-27);

selecting a first one of the storage locations (the router inherently selects a first table by

searching for a number of bits corresponding to the shortest prefix length of destination address

in the first table, step 62-fig. 5, page 15, lines 6-22) *based on a first set of bits contained in the*

header data; and executing an instruction at the first selected storage location (wherein an

inherent execution of entry of the first table comprises a pointer to the second table);

selecting a second one of the storage locations based on the executed instruction and a

second set of bits contained in the header data (the router inherently selects a second table by

searching for a number of bits corresponding to the next shortest prefix length of destination

address in the second table, step 66-fig. 5, page 15, lines 22-26);

selecting a third one of the storage locations based on contents of the second selected

storage location and a third set of bits contained in the header data (the router inherently selects

a third table by searching for a number of bits corresponding to the another next shortest prefix

length of destination address in the third table, wherein a match found in the second table

comprises a pointer to the third table, step 68-fig. 5, page 15, lines 26-29).

Regarding claim 5, the packet is an IP packet, page 8, lines 25-27.

Regarding claim 3, please see the rejection of claim10, step 70-fig. 5.

Regarding claim 10, Sjodin discloses a lookup device and a method for classification and

forwarding of packets.   Figure 5 discloses a flow chart describing a method for forwarding an IP

packet by searching for a longest matching prefix in a header of a destination address of an IP

packet in three stages (*lookups*) or so.   The search for the longest matching prefix bases on for a

first number of bits, second number of bits, and for a third number of bit in the respective tables,

page 15, lines 6-35.

using a first set of bits from the destination address of the IP packet as an index   (a

stage) *to locate a first entry in a first forwarding lookup* (first table) (a router inherently uses a

first set of bits representing a short prefix length from a 32-bit destination address of a packet

header as a first stage to search for a match. A match found leads to one of the entries of a table

in each stage, fig. 5-step 62, page 15, lines 6-20);

where the first entry in the first forwarding lookup provides direction to a second

forwarding lookup (wherein the entry comprises a pointer to the table in the next stage, fig. 5-

step 64, page 15, lines 17-25), *using a second set of bits from the destination address as an index*

to locate a second entry in a second forwarding lookup (the router inherently uses a second set of

bits representing a next short prefix length from a 32-bit destination address of a packet as a

second stage to search for a match of entry of the second table);

employing content of the second entry in forwarding the IP packet, wherein employing content of the second entry comprises identifying that a third forwarding lookup should be used for forwarding the IP packet (at step 66-fig. 5 where a match is found comprises a pointer to the third table, page 15, lines 22-29); *and*

employing a third set of bits from the destination address as an index to locate a third entry in the third forwarding lookup and employing the contents of the third entry in forwarding the IP packet (the router inherently uses a third set of bits representing another short prefix length from the 32-bit destination address of the packet header as a third stage to search for a match entry in the third table, and if the longest matching prefix has been found, the information in the entry is used for forwarding the IP packet, fig. 5-step 70, page 15, lines 29-33).

Regarding claims 7, and 30, please see the rejection of claim 10, fig. 5-step 66.

Regarding claims 8, and 31, please see the rejection of claim 10, fig. 5-step 62, where the content of the entry of the first table comprises a pointer to the second table.

Regarding claim 11, the router is an IP router, page 7-line 20, therefore, the router inherently includes a plurality of ASIC, e.g., ingress/egress line cards for inputs/outputs.

Regarding claims 12, 15, 21, 24, and 29, these claims have similar limitations as claim 10. Therefore, they are rejected under Sjodin for the same reasons set forth in the rejection of claim 10.

Regarding claim 13, the packet is an IP packet, page 8, lines 25-27.

Regarding claim 16, the IP router inherently includes a forwarding engine which comprises a processor for executing instructions(forwarding controller).

Regarding claim 22, the router inherently includes ingress ports and forwarding tables that hold information regarding the input ports on which IP packets arrive.

Regarding claim 23, the entries in the forwarding table contains instructions for directing the forwarding engine to access the table (forwarding table).

Regarding claim 25, each entry in the table comprises a pointer field which either comprises a pointer to the table in the next stage, or a pointer to a routing table storing the forwarding information, page 15, lines 13-17.

Regarding claim 27, the step of extracting information from the header is inherent in an IP router.

Regarding claim 28, the packet is an IP packet, page 8, lines 25-27.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103©

and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

6.   Claims 17-18, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Sjodin(WO 99/13619-in record), in view of Irwin (US 6,052,683-in record).

Regarding claims 17-18, Sjodin discloses all claimed limitation except the entries in the

first look up structure are indexed more than a byte of bits, and indexed by two bytes.

Irwin discloses an apparatus for address lookup in packet data communication

networks. In Irwin the router inherently selects a first set of bytes n1.n2. of a four

address bytes (n1.n2.n3.n4) of the network address IDA 80 for performing a lookup in

lookup table module 66-fig. 4, column 8-lines 1-9, and lines 53-54.

It would have been obvious to one of ordinary skill in the art, at the time invention was

made, to employ a mechanism for searching a longest matching prefix at a first lookup with two

bytes of bits as taught by Irwin into the system of Sjodin in such a way to reduce the search in a

fewer stages, thereby providing a suitable searching method for a high-end IP router for

forwarding a packet to its destination IP address.

Regarding claim 26, this claim has similar limitations as claim 17. Therefore, it is

rejected under Sjodin for the same reasons set forth in the rejection of claim 17.

Response to Arguments

7.   Applicant's arguments with respect to claims 1-31 have been considered but are moot in

view of the new ground(s) of rejection.

Conclusion

8.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Imanaka et al. (US 6,057,887) ; Kuwahara (US 5,784,380) are cited to show a method for receiving information, apparatus for receiving information and medium, which is considered pertinent to the claimed invention.

9.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc Ho whose telephone number is (703) 305-1332. The examiner can normally be reached on Monday through Friday from 7:00 am to 3:30 pm.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (703) 308-6602.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4750

10.   Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,

Arlington. VA, Sixth Floor (Receptionist).

Patent Examiner

Duc Ho

4-30-03